

CLAIMS

1. Gasoline internal combustion engine with controlled ignition comprising at least one cylinder (1), a cylinder head (2) closing the cylinder (1), a piston (3) slidably arranged in the cylinder (1), a combustion chamber (4) defined in the cylinder (1) between an upper face (30) of the piston (3) and a lower face (20) of the cylinder head (2), means (5) for injecting gasoline, ignition means (6) intended to produce an ignition of the air-gasoline mixture in the combustion chamber, intake valves (7) and exhaust valves (8) selectively closing the combustion chamber (4), an injection pump (8) intended to supply pressurized gasoline to the injector (5), characterized in that the pressure of the gasoline supplied to the injector (5) is above 250 bars, and in that, at least in an operation range of the engine subject to the clicking phenomenon, the amount of gasoline supplied by the pump (8) to the injector (5) for a combustion cycle is fractionated in the form of a plurality of partial and distinct injections, and in that at least one of these partial injections is delivered before ignition of the load in the combustion chamber (4) by the ignition means (6), and at least one partial injection is delivered after this ignition.

2. Engine according to claim 1, characterized in that the amount of gasoline injected before the ignition is comprised between 20 to 50% of the total amount of gasoline injected for the combustion cycle concerned.

3. Engine according to claim 1 or 2, characterized in that the amount of gasoline delivered by the pump (8) to the injector (5) for a combustion cycle comprises, before ignition of the load, between one and ten distinct partial injections.

4. Engine according to any one of claims 1 to 3, characterized in that the amount of gasoline delivered by the pump (8) to the injector (5) for a combustion cycle comprises, after ignition of the load, between one and ten distinct partial injections.

5 5. Engine according to any one of claims 1 to 4, characterized in that, when the engine speed is comprised between 750 and 4,500 revolutions/min approximately, and preferably between 1,000 and 4,000 revolutions/min, the amount of gasoline delivered by the pump (8) to the injector (5) for a combustion cycle is fractionated in the form of a plurality of partial and distinct injections.

10 6. Engine according to any one of claims 1 to 5, characterized in that, when the engine is in a so-called high speed range of operation, comprised for example between 4,000 and 7,000 revolutions/min, the amount of gasoline delivered by the pump (8) to the injector (5) for a combustion cycle is delivered in the form of a single injection or fractionated in the form of a plurality of partial and distinct injections.

15 7. Engine according to claim 6, characterized in that the amount of gasoline delivered by the pump (8) to the injector (5) is delivered in the form of an injection of short duration, i.e., of a duration comprised between ten and one hundred degrees crankshaft approximately.

8. Engine according to any one of the preceding claims, characterized in that the engine has a four-stroke or two-stroke combustion cycle.

20 9. Engine according to any one of the preceding claims, characterized in that the engine is an indirect injection engine.

10. Engine according to any one of claims 1 to 8, characterized in that the engine is a direct injection engine.

11. Engine according to claim 10, characterized in that the partial injection or injections injected before the ignition are delivered by the pump (8) in a time interval close to the combustion high dead center.

12. Engine according to any one of the preceding claims, characterized in that the
5 pressure of the gasoline supplied to the injector (5) is comprised between 250 and 2,500 bars, and, preferably, between 300 and 2,000 bars.